

What Is Claimed Is:

1 1. A method of conducting an inventory of items by a network tag reader,
2 wherein a tag is attached to each item and each tag is permanently assigned a tag
3 identification number (Tag ID), the method comprising the steps of:

4 selecting one of a plurality of remote access sensor modules, wherein the
5 selected remote access sensor module comprises a coverage pattern that defines
6 a physical area;

7 interrogating one or more tags through the selected remote access sensor
8 module, wherein the one or more tags are within the physical area defined by the
9 coverage pattern, thereby receiving information regarding the one or more tags;

10 storing the information received in said interrogating step in a plurality of
11 inventory records;

12 repeating said selecting, interrogating, and storing steps for each remote
13 access sensor module; and

14 after said selecting, interrogating, and storing steps are performed for each
15 remote access sensor module, processing the information in the plurality of
16 inventory records.

1 2. The method of claim 1, wherein the information received in said
2 interrogating step comprises one or more Tag IDs, each Tag ID corresponding to
3 the one or more tags within the physical area defined by the coverage pattern.

1 3. The method of claim 2, further comprising the step of repeating said
2 selecting, interrogating, storing, repeating, and processing steps.

1 4. The method of claim 3, wherein said storing step comprises the step of:
2 if a Tag ID received during an initial performance of said interrogating
3 step has not been received during a subsequent performance of said interrogating
4 step within a predetermined time period, storing information in one of the

5 plurality of inventory records that indicates a tag corresponding to the Tag ID is
6 missing.

1 5. The method of claim 4, wherein said processing step comprises the step
2 of initiating a security action when a Tag ID is missing.

1 6. The method of claim 5, wherein said security action comprises turning on
2 a surveillance camera.

1 7. The method of claim 5, wherein said security action comprises activating
2 a silent alarm.

1 8. The method of claim 2, wherein said processing step comprises the step
2 of correlating a remote access sensor module identity with each of the one or
3 more Tag IDs received in said interrogating step to maintain data regarding the
4 location of each tag corresponding to the one or more Tag IDs.

1 9. The method of claim 1, wherein the information received in said
2 interrogating step comprises sensor information originated by a sensor in a tag
3 within the physical area defined by the coverage pattern.

1 10. The method of claim 9, wherein said sensor information indicates tag
2 movement and vibration.

1 11. The method of claim 9, wherein said sensor information indicates ambient
2 tag temperature.

1 12. The method of claim 9, wherein said processing step comprises the step
2 of analyzing said sensor information for a condition that indicates a security
3 breach.

1 13. The method of claim 12, wherein said condition that indicates a security
2 breach comprises a temperature fluctuation.

1 14. The method of claim 12, wherein said condition that indicates a security
2 breach comprises a sudden vibration.

1 15. The method of claim 1, wherein the network tag reader is connected to
2 each of the plurality of remote access sensor modules through an electrical power
3 distribution system.

1 16. The method of claim 1, wherein said interrogating step comprises the
2 steps of:

3 at the network tag reader,

4 transmitting through the selected remote access sensor module a wake-up
5 signal followed by at least one first clock signal;

6 at each tag within the physical area defined by the coverage pattern of the
7 selected remote access sensor module,

8 incrementing a first tag count in response to said at least one first clock
9 signal, and

10 transmitting the Tag ID assigned to said each tag when the Tag ID of said
11 each tag corresponds to said first tag count;

12 at the network tag reader,

13 incrementing a first reader count in response to said at least one first
14 clock signal,

15 storing a given first reader count when more than one tag responds to one
16 of said at least one first clock signal that corresponds to said given
17 first reader count, and

18 transmitting through the selected remote access sensor module said given
19 first reader count followed by at least one second clock signal; and

at each tag that responded to said one of said at least one first clock signal that corresponds to said given first reader count, incrementing a second tag count in response to said at least one second clock signal, and transmitting a manufacturer number assigned to said each tag that responded to said one of said at least one first clock signal that corresponds to said given first reader count when the manufacturer number of said each tag corresponds to said second count.

17. The method of claim 1, wherein the network tag reader is a PCMCIA card.

18. The method of claim 1, wherein at least one of the remote access sensor modules attaches to an electrical lighting fixture.

19. A system for conducting an inventory of items by a network tag reader, wherein a tag is attached to each item and each tag is permanently assigned a tag identification number (Tag ID) and a manufacturer number, the system comprising:

means for selecting one of a plurality of remote access sensor modules, wherein the selected remote access sensor module comprises a coverage pattern that defines a physical area;

means for interrogating one or more tags through the selected remote access sensor module, wherein the one or more tags are within the physical area defined by the coverage pattern, thereby receiving information regarding the one or more tags;

means for storing the information received by said interrogating means in a plurality of inventory records;

14 means for repeating said selecting, interrogating, and storing means for
15 each remote access sensor module; and
16 means for processing the information in the plurality of inventory records.

1 20. The system of claim 19, wherein the information received by said
2 interrogating means comprises one or more Tag IDs, each Tag ID corresponding
3 to the one or more tags within the physical area defined by the coverage pattern.

1 21. The system of claim 20, further comprising means for repeatedly invoking
2 said selecting, interrogating, storing, repeating, and processing means.

1 22. The system of claim 21, wherein said storing means comprises:
2 if a Tag ID received during an initial performance of said interrogating
3 means has not been received during a subsequent performance of said
4 interrogating means within a predetermined time period, means for storing
5 information in one of the plurality of inventory records that indicates a tag
6 corresponding to the Tag ID is missing.

1 23. The system of claim 22, wherein said processing means comprises means
2 for initiating a security action when a Tag ID is missing.

1 24. The system of claim 23, wherein said means for initiating a security action
2 comprises means for turning on a surveillance camera.

1 25. The system of claim 23, wherein said means for initiating a security action
2 comprises means for activating a silent alarm.

1 26. The system of claim 20, wherein said processing means comprises means
2 for correlating a remote access sensor module identity with each of the one or

3 more Tag IDs received by said interrogating means to maintain data regarding the
4 location of each tag corresponding to the one or more Tag IDs.

1 27. The system of claim 19, wherein the information received by said
2 interrogating means comprises sensor information originated by a sensor in a tag
3 within the physical area defined by the coverage pattern.

1 28. The system of claim 27, wherein said sensor information indicates tag
2 movement and vibration.

1 29. The system of claim 27, wherein said sensor information indicates
2 ambient tag temperature.

1 30. The system of claim 27, wherein said processing means comprises means
2 for analyzing said sensor information for a condition that indicates a security
3 breach.

1 31. The system of claim 30, wherein said condition that indicates a security
2 breach comprises a temperature fluctuation.

1 32. The system of claim 30, wherein said condition that indicates a security
2 breach comprises a sudden vibration.

1 33. The system of claim 19, wherein the network tag reader is connected to
2 each of the plurality of remote access sensor modules through an electrical power
3 distribution system.

1 34. The system of claim 19, wherein said interrogating step comprises:
2 at the network tag reader,

3 means for transmitting through the selected remote access sensor module
4 a wake-up signal followed by at least one first clock signal;
5 at each tag within the physical area defined by the coverage pattern of the
6 selected remote access sensor module,
7 means for incrementing a first tag count in response to said at least one
8 first clock signal, and
9 means for transmitting the Tag ID assigned to said each tag when the Tag
10 ID of said each tag corresponds to said first tag count;
11 at the network tag reader,
12 means for incrementing a first reader count in response to said at least one
13 first clock signal,
14 means for storing a given first reader count when more than one tag
15 responds to one of said at least one first clock signal that
16 corresponds to said given first reader count, and
17 means for transmitting through the selected remote access sensor module
18 said given first reader count followed by at least one second clock
19 signal; and
20 at each tag that responds to said one of said at least one first clock signal that
21 corresponds to said given first reader count,
22 means for incrementing a second tag count in response to said at least one
23 second clock signal, and
24 means for transmitting the manufacturer number assigned to said each tag
25 that responded to said one of said at least one first clock signal
26 that corresponds to said given first reader count when the
27 manufacturer number of said each tag corresponds to said second
28 count.

1 35. The system of claim 19, wherein the network tag reader is a PCMCIA
2 card.

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